example 1 megohm, for the relay coil 314 of stage 304. Since resistor 335 is very large, it prevents stage 304R from remaining ionized once it is ignited. Thus, energization of stage 304R turns off any other stage that is on because of an output on line 330 and stage 304R is then extinguished by resistor 335 so that all of the stages 301–304 and 304R are off.

The grid of neon tube 305 of stage 301 is connected to accept key 15, and the tube is ignited whenever the key 15 is touched. The relay coil 311 of stage 301 is connected to relay switches 336 and 337. Operation of relay switch 336 connects voltage source 338 to capacitor 339. Capacitor 339 is connected to line 212, which is connected to reset lines 53 of each of the columns 201–204.

Upon relay switch 337 being actuated to the transfer position, row switching input line 226 is then connected to the row switching input line 51 of column 201. Similarly, relay coils 312–314 are connected to relay switches 340–342 so that ignition of the associated stage causes the relay switch to be thrown and thereby connect row switching input line 226 to row switching input line 51 of the associated column.

The output of stage 301 is connected by means of capacitor 331 and line 330 to output terminal 216. Thus, when stage 301 is ignited by key 15, capacitor 331 and line 330 provide an output pulse at terminal 216 to indicate to the computer that the operator is ready to accept data from the computer.

In operation, to transmit information to the terminal 10, the computer transmits a pulse to output/input terminal 223, which is transmitted by switch 220 to "data coming" lamp 17, turning on the lamp. When the operator is ready to receive the message, he touches accept key 15, igniting stage 301. The ignition of stage 301 provides an output pulse on line 330 which is transmitted to output terminal 216. This output pulse signals the computer that the operator is ready to receive the message. The ignition of stage 301 also throws relay switches 336 and 337. Relay switch 336 connects voltage source 338 to capacitor 339, which converts the voltage into a pulse which is transmitted by line 212 to reset input line 53 of each of the columns 201–204. This pulse then resets each of the columns so that only stage #R is on.

The computer then transmits the message by applying pulses to terminals 223 and 225. The pulses appearing on line 225 are transmitted by row switching input line 226 and switch 337 to row switching input line 51 of column 201. As described above, application of these pulses sequentially steps the stages of column 201 as long as pulses are applied. When the computer has transmitted a proper number of pulses so that the desired stage is ignited in column 201, the computer applies a pulse to terminal 223. This pulse is transmitted by switch 220 and column switching input line 320 to transfer circuit 316. As described above, the transfer circuit ignites stage 302 which extinguishes stage 301. This throws switch 340 and disconnects switches 336 and 337. In this manner, row switching input line 226 is now connected to row switching input line 51 of column 202. As before, the pulses applied to pulse input terminal 225 by the computer sequentially operate the stages of column 202 until the desired stage is ignited.

Then the computer supplies another pulse on output/input terminal 223 to ignite stage 303 and extinguish stage 302. The pulses on input terminal 225 then advance the stages of column 203 until the desired display is provided. The next pulse at terminal 223 ignites stage 304 and extinguishes stage 303 so that the stages of column 204 are then advanced by pulses at terminal 225.

Upon completion of transmission of the desired message, a final pulse is applied at output/input terminal 223. This pulse is transmitted by switch 220 and line 320 to transfer circuit 319 which ignites stage 304R, thereby extinguishing stage 304. Resistor 335 then extinguishes stage 304R so that all of the stages 301–304 and 304R are turned off, resetting that portion of the circuit. The selected stages of columns 201–204 remain ignited providing a continuing display until the keyboard 10 is cleared.

As a modification of the described invention, pulse input terminal 225 may be replaced by a pulse source for reading out data entered on the terminal 10 by the operator. The pulse source is actuated by read key 16, and has the advantage that two such terminals could be connected to one another and data could thus be transmited between the terminals without connection to a computer. Pulse input terminal 225 would still be required to allow the computer or another terminal to display a message at the terminal.

While the invention has been particularly shown and described with reference to a preferred embodiment thereof, it will be understood by those skilled in the art that the foregoing and other changes in form and details may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. An input-output converter for use with an associated keyboard, said keyboard having an input line for each key therein and producing an output signal on a selected one of the plurality of output lines, to convert, under the control of an input pulse source, said output signal of said keyboard into a series of pulses indicative of the particular one of said lines having said output signal and to convert a series of input pulses from said input pulse source into a display as directed by said series of input pulses, comprising:

a plurality of three-element gas tube stages, each of said stages having an input terminal and an output terminal, each one of said output lines of said keyboard being connected to the input terminal of a corresponding one of said three-element gas tube stages, whereby an output signal on one of said output lines operates said corresponding three-element gas tube stage;

common output means connected to said output terminal of each of said gas tube stages to provide a pulse whenever one of said stages is operated;

a common input line connected to said pulse source;

a plurality of interconnection means connected to said common input line, each of said interconnection means being connected between the output terminal of a corresponding one of said gas tube stages to the input terminal of the sequentially adjacent one of said gas tube stages, said interconnection means being adapted for sequential transfer of data therebetween upon receipt of a pulse on said input line, whereby data is sequentially transferred along said stages in response to a chain of pulses received at said common input line from said pulse source; and

display means adapted to utilize the illumination from said gas tube stages to provide an indication of which of said stages are ignited.

2. Keyboard apparatus having a plurality of conductive keys for providing, under the control of a series of input pulses, a series of output pulses indicative of the particular one of said keys having been touched, and for responding to a series of input pulses by providing a display as directed by said series of input pulses, comprising:

a plurality of three-element touch-sensitive gas tube stages, the grid of each one of said plurality of stages being connected to a corresponding conductive key of said keyboard;

a plurality of capacitors, one terminal of each of said capacitors being connected to the second element of a corresponding one of said plurality of gas tube stages;